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RAW SEQUENCE LISTING              DATE: 08/27/2004
PATENT APPLICATION:  US/10/720,831    TIME: 11:37:28

       Input Set : N:\Crf3\RULE60\10720831.raw
       Output Set: N:\CRF4\08272004\J720831.raw

       SEQUENCE LISTING
  3 (1)  GENERAL INFORMATION:
  5      (i) APPLICANT: Berg, Richard A
  6                     Toman, David P
  7                     Wallace, Donald
  9     (ii) TITLE OF INVENTION: MUTATED RECOMBINANT COLLAGENS
 12    (iii) NUMBER OF SEQUENCES: 33
 14     (iv) CORRESPONDENCE ADDRESS:
 15          (A) ADDRESSEE: COLLAGEN CORPORATION
 16          (B) STREET: 2500 Faber Place
 17          (C) CITY: Palo Alto
 18          (D) STATE: California
 19          (E) COUNTRY: USA
 20          (F) ZIP: 94303
 22      (v) COMPUTER READABLE FORM:
 23          (A) MEDIUM TYPE: Floppy disk
 24          (B) COMPUTER: IBM PC compatible
 25          (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 26          (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
 28     (vi) CURRENT APPLICATION DATA:
> 29          (A) APPLICATION NUMBER: US/10/720,831
> 30          (B) FILING DATE: 24-Nov-2003
 31          (C) CLASSIFICATION: 435
 32    (vii) PRIOR APPLICATION DATA:
 33          (A) APPLICATION NUMBER: US/08/278,774
 34          (B) FILING DATE: 22-JUL-1994
 35   (viii) ATTORNEY/AGENT INFORMATION:
 36          (A) NAME: Rafayko, Kathi L
 37          (B) REGISTRATION NUMBER: 36,644
 38          (C) REFERENCE/DOCKET NUMBER: 94-018
 40     (ix) TELECOMMUNICATION INFORMATION:
 41          (A) TELEPHONE: (415) 354-4642
 42          (B) TELEFAX: (415) 354-4752
 43          (C) TELEX:
 46 (2) INFORMATION FOR SEQ ID NO: 1:
 48      (i) SEQUENCE CHARACTERISTICS:
 49          (A) LENGTH: 4 amino acids
 50          (B) TYPE: amino acid
 51          (C) STRANDEDNESS: single
 52          (D) TOPOLOGY: linear
 54     (ii) MOLECULE TYPE: peptide
 58     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
 60      Asp Asp Asp Lys
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```
61      1
63 (2)  INFORMATION FOR SEQ ID NO: 2:
65      (i) SEQUENCE CHARACTERISTICS:
66          (A) LENGTH: 4 amino acids
67          (B) TYPE: amino acid
68          (C) STRANDEDNESS: single
69          (D) TOPOLOGY: linear
71      (ii) MOLECULE TYPE: peptide
75      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
77      Ile Glu Gly Arg
78      1
80 (2)  INFORMATION FOR SEQ ID NO: 3:
82      (i) SEQUENCE CHARACTERISTICS:
83          (A) LENGTH: 7 amino acids
84          (B) TYPE: amino acid
85          (C) STRANDEDNESS: single
86          (D) TOPOLOGY: linear
88      (ii) MOLECULE TYPE: peptide
92      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
94      Tyr Ile His Pro Phe His Leu
95      1           5
97 (2)  INFORMATION FOR SEQ ID NO: 4:
99      (i) SEQUENCE CHARACTERISTICS:
100         (A) LENGTH: 4 amino acids
101         (B) TYPE: amino acid
102         (C) STRANDEDNESS: single
103         (D) TOPOLOGY: linear
105     (ii) MOLECULE TYPE: peptide
109     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
111     Ala Ala His Tyr
112     1
114 (2) INFORMATION FOR SEQ ID NO: 5:
116     (i) SEQUENCE CHARACTERISTICS:
117         (A) LENGTH: 4 amino acids
118         (B) TYPE: amino acid
119         (C) STRANDEDNESS: single
120         (D) TOPOLOGY: linear
122     (ii) MOLECULE TYPE: peptide
126     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:
128     Arg Gly Pro Arg
129     1
131 (2) INFORMATION FOR SEQ ID NO: 6:
133     (i) SEQUENCE CHARACTERISTICS:
134         (A) LENGTH: 17 amino acids
135         (B) TYPE: amino acid
136         (C) STRANDEDNESS: single
137         (D) TOPOLOGY: linear
139     (ii) MOLECULE TYPE: peptide
143     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:
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Input Set : N:\Crf3\RULE60\10720831.raw
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```
145      Gln Leu Ser Tyr Gly Tyr Asp Glu Lys Ser Thr Gly Gly Ile Ser Val
146      1                   5                   10                  15
148      Pro
151 (2) INFORMATION FOR SEQ ID NO: 7:
153      (i) SEQUENCE CHARACTERISTICS:
154          (A) LENGTH: 15 amino acids
155          (B) TYPE: amino acid
156          (C) STRANDEDNESS: single
157          (D) TOPOLOGY: linear
159     (ii) MOLECULE TYPE: peptide
163     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:
165      Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly Gly Asn Phe Ala Pro
166      1                   5                   10                  15
168 (2) INFORMATION FOR SEQ ID NO: 8:
170      (i) SEQUENCE CHARACTERISTICS:
171          (A) LENGTH: 15 amino acids
172          (B) TYPE: amino acid
173          (C) STRANDEDNESS: single
174          (D) TOPOLOGY: linear
176     (ii) MOLECULE TYPE: peptide
180     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:
182      Pro Pro Gln Glu Lys Ala His Asp Gly Gly Arg Tyr Tyr Arg Ala
183      1                   5                   10                  15
185 (2) INFORMATION FOR SEQ ID NO: 9:
187      (i) SEQUENCE CHARACTERISTICS:
188          (A) LENGTH: 15 amino acids
189          (B) TYPE: amino acid
190          (C) STRANDEDNESS: single
191          (D) TOPOLOGY: linear
193     (ii) MOLECULE TYPE: peptide
197     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:
199      Asp Asp Ala Asn Val Val Arg Asp Arg Asp Leu Glu Val Asp Thr
200      1                   5                   10                  15
202 (2) INFORMATION FOR SEQ ID NO: 10:
204      (i) SEQUENCE CHARACTERISTICS:
205          (A) LENGTH: 11 amino acids
206          (B) TYPE: amino acid
207          (C) STRANDEDNESS: single
208          (D) TOPOLOGY: linear
210     (ii) MOLECULE TYPE: peptide
214     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:
216      Gln Tyr Asp Gly Lys Gly Val Gly Leu Gly Pro
217      1                   5                   10
219 (2) INFORMATION FOR SEQ ID NO: 11:
221      (i) SEQUENCE CHARACTERISTICS:
222          (A) LENGTH: 15 amino acids
223          (B) TYPE: amino acid
224          (C) STRANDEDNESS: single
225          (D) TOPOLOGY: linear
```

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227       (ii) MOLECULE TYPE: peptide
231       (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:
233       Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly Gly Asn Phe Ala Ala
234       1               5                   10                  15
236  (2) INFORMATION FOR SEQ ID NO: 12:
238       (i) SEQUENCE CHARACTERISTICS:
239            (A) LENGTH: 16 amino acids
240            (B) TYPE: amino acid
241            (C) STRANDEDNESS: single
242            (D) TOPOLOGY: linear
244       (ii) MOLECULE TYPE: peptide
248       (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:
W--> 250  Gly Gly Gly Tyr Asp Phe Gly Tyr Asp Gly Asp Phe Tyr Arg Ala Xaa
251       1               5                   10                  15
254  (2) INFORMATION FOR SEQ ID NO: 13:
256       (i) SEQUENCE CHARACTERISTICS:
257            (A) LENGTH: 15 amino acids
258            (B) TYPE: amino acid
259            (C) STRANDEDNESS: single
260            (D) TOPOLOGY: linear
262       (ii) MOLECULE TYPE: peptide
266       (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:
268       Asp Gln Pro Arg Ser Ala Pro Ser Leu Arg Pro Lys Asp Tyr Glu
269       1               5                   10                  15
271  (2) INFORMATION FOR SEQ ID NO: 14:
273       (i) SEQUENCE CHARACTERISTICS:
274            (A) LENGTH: 19 amino acids
275            (B) TYPE: amino acid
276            (C) STRANDEDNESS: single
277            (D) TOPOLOGY: linear
279       (ii) MOLECULE TYPE: peptide
283       (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:
285       Gln Met Ala Gly Gly Phe Asp Glu Lys Ala Gly Gly Ala Gln Met Gly
286       1               5                   10                  15
288       Val Gln Met
291  (2) INFORMATION FOR SEQ ID NO: 15:
293       (i) SEQUENCE CHARACTERISTICS:
294            (A) LENGTH: 15 amino acids
295            (B) TYPE: amino acid
296            (C) STRANDEDNESS: single
297            (D) TOPOLOGY: linear
299       (ii) MOLECULE TYPE: peptide
303       (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:
305       Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly Gly Asn Phe Ala Ala
306       1               5                   10                  15
308  (2) INFORMATION FOR SEQ ID NO: 16:
310       (i) SEQUENCE CHARACTERISTICS:
311            (A) LENGTH: 15 amino acids
312            (B) TYPE: amino acid
```

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```
313          (C) STRANDEDNESS: single
314          (D) TOPOLOGY: linear
316      (ii) MOLECULE TYPE: peptide
320      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:
322      Gly Pro Arg Glu Lys Gly Pro Asp Pro Met Gln Tyr Met Arg Ala
323      1               5                   10                  15
325  (2) INFORMATION FOR SEQ ID NO: 17:
327      (i) SEQUENCE CHARACTERISTICS:
328          (A) LENGTH: 15 amino acids
329          (B) TYPE: amino acid
330          (C) STRANDEDNESS: single
331          (D) TOPOLOGY: linear
333      (ii) MOLECULE TYPE: peptide
337      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:
339      Asp Glu Ala Asp Ser Thr Leu Arg Gln His Asp Val Glu Val Asp
340      1               5                   10                  15
342  (2) INFORMATION FOR SEQ ID NO: 18:
344      (i) SEQUENCE CHARACTERISTICS:
345          (A) LENGTH: 14 amino acids
346          (B) TYPE: amino acid
347          (C) STRANDEDNESS: single
348          (D) TOPOLOGY: linear
350      (ii) MOLECULE TYPE: peptide
354      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:
356      Gln Tyr Asp Ser Tyr Asp Val Lys Ser Gly Val Ala Val Gly
357      1               5                   10
359  (2) INFORMATION FOR SEQ ID NO: 19:
361      (i) SEQUENCE CHARACTERISTICS:
362          (A) LENGTH: 15 amino acids
363          (B) TYPE: amino acid
364          (C) STRANDEDNESS: single
365          (D) TOPOLOGY: linear
367      (ii) MOLECULE TYPE: peptide
371      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:
373      Gly Ile Cys Glu Ser Cys Pro Thr Gly Pro Gln Asn Tyr Ser Pro
374      1               5                   10                  15
376  (2) INFORMATION FOR SEQ ID NO: 20:
378      (i) SEQUENCE CHARACTERISTICS:
379          (A) LENGTH: 15 amino acids
380          (B) TYPE: amino acid
381          (C) STRANDEDNESS: single
382          (D) TOPOLOGY: linear
384      (ii) MOLECULE TYPE: peptide
388      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:
390      Gly Ile Gly Gly Glu Lys Ala Gly Gly Phe Ala Pro Tyr Tyr Gly
391      1               5                   10                  15
393  (2) INFORMATION FOR SEQ ID NO: 21:
395      (i) SEQUENCE CHARACTERISTICS:
396          (A) LENGTH: 15 amino acids
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 08/27/2004
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Input Set : **N:\Crf3\RULE60\10720831.raw**
Output Set: **N:\CRF4\08272004\J720831.raw**

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:12; Xaa Pos.16

Invalid Line Length:
The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:1; Line(s) 63
Seq#:2; Line(s) 80
Seq#:3; Line(s) 97
Seq#:4; Line(s) 114
Seq#:5; Line(s) 131
Seq#:6; Line(s) 151
Seq#:7; Line(s) 168
Seq#:8; Line(s) 185
Seq#:9; Line(s) 202
Seq#:10; Line(s) 219
Seq#:11; Line(s) 236.
Seq#:12; Line(s) 254
Seq#:13; Line(s) 271
Seq#:14; Line(s) 291
Seq#:15; Line(s) 308
Seq#:16; Line(s) 325
Seq#:17; Line(s) 342
Seq#:18; Line(s) 359
Seq#:19; Line(s) 376
Seq#:20; Line(s) 393
Seq#:21; Line(s) 410
Seq#:22; Line(s) 426
Seq#:23; Line(s) 442
Seq#:24; Line(s) 458
Seq#:25; Line(s) 476
Seq#:26; Line(s) 492
Seq#:27; Line(s) 508
Seq#:28; Line(s) 523
Seq#:29; Line(s) 539
Seq#:30; Line(s) 555
Seq#:31; Line(s) 571
Seq#:32; Line(s) 587

VERIFICATION SUMMARY   DATE: 08/27/2004
PATENT APPLICATION: **US/10/720,831**   TIME: 11:37:29

Input Set : **N:\Crf3\RULE60\10720831.raw**
Output Set: **N:\CRF4\08272004\J720831.raw**

L:29 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:30 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]
L:250 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:0